AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT	1. CONTRACT ID CODE	PAGE OF PAGES
		1 8

2. AMENDMENT/MODIFICATION NO.:	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	PROJECT NO. *(If applicable)*
0002	DEC 19, 2003	96311M-3301-6251	

6. ISSUED BY CODE	USAED	ADMINISTERED BY: CODE	
USAED-Baltimore District Contracting Division P.O. Box 1715 Baltimore MD 21203-1715			

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*	(x)	9A. AMENDMENT OF SOLICITATION NO.
		W912DR-04-B-0003
	X	9B. DATED *(SEE ITEM 11)* 28 November 2003
		10A. MODIFICATION OF CONTRACT/ ORDER NO.
		10B. DATED *(SEE ITEM 13)*
CODE	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

X The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ___ is extended X is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER No. ITEM 10A
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR43.103(b)
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)* Changes Clause 52.243-4

E. IMPORTANT: Contractor __ is not, __ is required to sign this document and return ____copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

DALECARLIA PUMPING STATION VALVE AND PIPING IMPROVEMENTS, WASHINGTON AQUEDUCT DIVISION, WASHINGTON, DC

SEE THE FOLLOWING PAGES

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR BY _____ *(signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ *(Signature of Contracting Officer)*	16C. DATE SIGNED

SPECIFICATIONS:

(1) Section 01520, Paragraph 1.3. Ninth Paragraph: Immediately after "the satisfaction of WA" insert "at no additional cost to WA. If, for any reason, the crane is not operational the contractor remains responsible to meet the schedule and cost requirements of the contract."

(2) Section 13405A, Paragraph 2.5.3: Change "from a minimum of 16 ports" to read "from a minimum of 8 ports up to 16 ports".

(3) Section 13405A, Paragraph 1.2.1: Insert "McMillian Water Treatment Plant" under the list of sites and insert "one new T1 line" under communication.

(4) Section 13405A, Paragraph 2.3.1.1: In the first sentence of the second paragraph insert "and Bryant Street" immediately after the words "and Dalecarlia WTP".

(5) Section 13405A, Paragraph 2.3.1.1: Add the following sentence to the end of this paragraph: "The RTU at Bryant Street will not require a radio."

(6) Section 13405A, Paragraph 2.4.2: Delete this paragraph, as originally issued, and substitute therefor the following new paragraph 2.4.2:

"2.4.2 Radio:

Provide 900 MHz license-free frequency hopping spread spectrum radio (FHSS). The radio shall receive inputs from new RTUs or existing Bristol Babcock remote control node or RTU 3305s. The radio network shall be capable of redundant path communication. The radio shall be able to store and forward information; multi-point-to-multi-point network, peer-to-peer or unsolicited polling. Provide radio with Media Access Control layer to prevent RF collisions by radio protocol. The Abasic multiple send@ technique shall not be accepted.

Provide all radios with multiple layers of security protection. Provide serial communications from remote sites to the master radio (Access Point, AP). The master radio shall support both serial and Ethernet communications. The multiple layers of data security shall include either FIPS 140-2 compliant encryption or 128-bit RC4 encryption to protect over-the-air packets and pseudo-random number shall initialize the IV (Initialization Vector) on the AP. Provide the AP with the ability to generate and distribute new security keys automatically or based on the system administrators command.

For radios with 128-bit RC4 encryption provide four (4) secret shared keys as; one (1) for encryption of key exchange packets and three (3) for rotation of encryption data. Automatic key generation shall generate and distribute update information for the secret keys from the AP. The generated and distributed information shall include:

pseudo-random 64-bit key seed
key identifier that identifies which secret key to modify

The master key shall be hashed with the pseudo-random key seed to generate a new secret key. The reserved secret key shall be used only for key exchange packets and shall be generated directly from the master key and shall not be affected by automatic key rotation. The access point shall include procedures to ensure that all remote radios receive key updates.

Provide further security by limiting communications to only those radios which are identified by their hardware MAC address. Provide radio access only through a 15 character alpha-numeric, case sensitive network address. Protect the password from Abrute force@ password attack. Provide protection from Denial of Service (DoS) attacks through Ethernet port rate limiting and remote disabling with NMS traps on level of traffic (50, 75 and 100% of port capacity).

GENERAL	
Certification	FCC 15.247 and IC RSS-210
MTBF	35 years or better per Telcordia method 1, case 3.
Over-the-air transmit rate	512 Kbps or 256 Kbps based on receiving signal strength
Frequency Range	902-928 MHz FHSS
COMMUNICATIONS	
Radio (antenna port)	
Data Latency	<5 ms average, 30 ms maximum
Modulation Type	Binary CPFSK
Connector Type	TNC
Output Impedance	50 Ohms
Ethernet	10BaseT RJ-45
Serial	Minimum 2-Ports. RS-232 w/ DB9 connector. One port shall operate w/ RTS/CTS flow control. Byte length 10/11 bits.
Communication Configuration	TCP or UDP. UDP mode shall accept IP multicast addresses as valid destination address for local processing of data.
Protocol	Radios that require special protocol drivers shall not be acceptable
Packets	Packeting data with gaps or such that it may be received out of order shall not be acceptable
Transmission	Provide deterministic transmission. Non-deterministic transmission shall not be permitted
Data Rate	Adjustable from 1,200 to 115,200 bps.
RADIO TRANSCEIVER PERFORMANCE	
System Gain	Not less than 141dB as: Transmit power = 30 dB Antenna Gain = 12 dB Receive Sensitivity = -99dB Total system gain = 141dB
Over-the-air transmission rate	512 Kbps or 256 Kbps depending on receiver signal strength
Frequency hopping	50 separate frequencies between 902 to 928 MHz
Frequency groups	Provide a minimum of 10 non-overlapping zones of 8 frequencies
Frequency operating zones	7 zones to maintain FCC compliance
Frequency zone	Master radio (Access Point) shall initiate command

selection	broadcast to all radios
Network ID	Provide radio with 15-byte minimum network name
TRANSMITTER	
Power Output	Adjustable from 0.1 watts to the FCC maximum of 1.0 watts
Duty Cycle	Continuous
Spurious Emission	-67 dBc
Transmitter Keying	Data activated
Channel Bandwidth	316.5 kHz
RECEIVER	
Type	Double conversion superheterodyne
Sensitivity	-99 dBm @ 256 Kbps < 1x10-6 BER -92 dBm @ 512 Kbps < 1x10-6 BER
Inter-modulation	59 dB minimum (EIA)
Desensitization	70 dB
Spurious	60 dB
RSSI range	-50 dBm to -120 dBm
SOFTWARE / FIRMWARE	
Tuning	Provide automatic optimization. Internal or external adjustments shall not be permitted.
Dwell time	Provide a minimum of four user configurable settings
Buffering	Provide operating mode to eliminate gaps in messages for protocols that cannot tolerate gaps.
POWER	
DC	10.5 to 30 VDC
AC	120/240 VAC 50 / 60 Hz
Supply	Provide power from RTU UPS
Protection	Provide diode to protect against inverted power lead connections.
ENVIRONMENT	
Temperature	-30E to +60EC (-22E to 140EF)
Humidity	up to 95% at 40EC (104EF) non-condensing
Enclosure	Provide die-cast aluminum minimum. Other enclosures may be required to meet electrical code or environmental conditions.
RADIO SYSTEM MANAGEMENT	
Information access	Provide Lap Top PC dedicated to radio network diagnostics and management to improve communications security. The PC shall connect to the radio serial port. Analysis shall be made from a single radio or from the AP. Information shall be archived to the PC hard drive and internal RWCD.
Diagnostics	Provide communications, power, link status, alarm state, radio data activity intrusion detection and serial data activity.
Local Indicators	Provide LED indicators for: power, link status, alarm state, connection status, communications activity and radio data activity.

Configuration	Through dedicated PC. Internal or external adjustments shall not be permitted do reduce security risks.

The radio shall be housed in the RTU enclosure or a separate NEMA 4X 316 SS enclosure. The radio shall be connected with a band-pass filter to and communicate via an omni-directional or yagi antenna. Provide the band-pass filter to reject interference from sources like pagers and cell phones."

(7) Section 13405A, Paragraph 2.4.6: Immediately after this paragraph insert the following new paragraph 2.4.7:

"2.4.7 Firewall

Provide a four (4) Firewalls as depicted on the network diagram. The firewall(s) shall provide protection to the SCADA system and their historians and limit access from outside. The firewall(s) shall not permit any outside connection to the SCADA network. The first firewall shall connect the SCADA network to the historian and only allow the SCADA network to push archive data to the historian. This firewall shall also permit the exchange of information between the two (2) SCADA networks through a dedicated hardwired connection. Provide connection that supports IPSEC. The second firewall shall connect the business (outside) network to the historian through the first firewall. This firewall shall be configured to allow only specific connections, controlled by IP address and port number, to query the historian. Further the historian shall not be permitted to initiate connections to the SCADA or outside business network. The operating process control staff shall not be permitted to access historical information from their SCADA control system workstations. Operating process control staff shall be able to access historical information through dedicated historical PC workstations.

The Firewall(s) shall be rack mounted. The firewall(s) shall have network connections limited to "inside" and "outside". The SCADA firewall(s) shall connect to the SCADA network, the historian, the business network firewall and the dedicated line between the second SCADA network. The firewall(s) shall not allow connections from outside sources like phone line connections or wireless networks. Provide firewall(s) with multiple layers of defense. The firewall(s) shall incorporate; stateful inspection (dynamic packet filtering), protocol and application inspection, in-line intrusion and preventing unauthorized network access. The firewall(s) shall examine packet streams and limit access by IP address and port number. The firewall(s) shall support IPSEC with both the triple DES (3DES) and the new 256-bit Advanced Encryption Standard (AES) algorithms. The firewall(s) shall protect the system from Denial-of-Service (DoS) and malformed packet attacks.

Provide each firewall in redundant configuration with an active-standby architecture. The firewall configuration shall synchronize the firewall connection state and device configuration data. The switching from active to standby shall be transparent to the user but shall be reported to the network administrator.

The firewall(s) shall only be configured locally but shall be capable of remote configuration. The firewall(s) shall not have any outside connections accept those specifically shown or described in these specifications.

The firewall(s) shall incorporate; a proprietary hardened operating system, have configurable access-control, strong authentication, dynamic and static NAT (Network Address Translation) and PAT (Port Address Translation)

Provide a devise manager that shows performance, trends, usage and security events. Provide firewall(s) with up to 16 customized administrative roles / profiles. Provide capability to monitor and log information through a local dedicated workstation with the capability of remote monitoring (not implemented).

The firewall(s) shall meet the following minimum specifications:

PERFORMANCE	
Clear text throughput;	188 Mbps
Concurrent connections	up to 130,000
Encryption	3DES and 256-bit AES
Encryption throughput	140 Mbps
TECHNICAL SPECIFICATIONS	
Processor	433-MHz
RAM	64 MB of SDRAM
Flash memory	16 MB
Cache	128 KB level 2 at 433 MHz
System bus	Single 32-bit, 33 MHz PCI
ENVIRONMENTAL OPERATING RANGES B Operating	
Temperature	-5E to 55EC (-25E to 131EF)
Relative Humidity	5% to 955 noncondensing
Acoustic Noise	45 dBa maximum
POWER	
Input (per power supply)	
Voltage	100V to 240V AC or 48V DC
Current	1.5 Amps
Frequency	50 to 60 Hz single phase
Output	
Steady State	50W
Maximum Peak	65W
Maximum Heat dissipation	410 BTU/hr, full power usage (65W)
Mounting	19-inch rack mount
INTERFACE	
Console Port	RS-232 (RJ-45) 9600 baud
Fail-over Port	RS-232 (DB-15) 115 Kbps
PCI Slots	Two (2) 32-bit 33-MHz
10/100 Fast Ethernet	Up to six (6) each integrated w/ auto-negotiate (half/full duplex), RJ-45

(8) Section 13405A, Paragraph 2.5.1: Delete the first and second sentence of this paragraph and substitute therefor the following sentences: “Provide seven (7) workstations. Provide three (3) workstations in the chemical building control room to mimic the existing workstations in the pump station control room. Provide four (4) workstations, two dedicated to each historian described in Section 13622.”

(9) Section 13622, Paragraph 2.1: Delete the first paragraph and substitute therefor the following:

“Provide two data historians. The first historian shall be located at the Dalecarlia facilities as indicated on these plans and specification. The second historian shall be located at the McMillan water treatment plant. These specifications specify a single historian so all quantities specified shall be doubled. The two historians shall provide an information bridge between the two facilities as depicted on drawing I-4. The data historian shall handle the storage and retrieval of numerical, digital and string data, and executes on servers running any of the following operating systems: Microsoft windows NT, 2000 or XP or later. Historians built around a relational database shall not be considered.”

(10) Section 15201. Paragraph 2.2.8: In the last paragraph, delete “2.2.9 4-way valves provide”.

(11) Section 15201, paragraph 2.5: In the first paragraph add “or APCO/Willamette” after the words “Henry Pratt”.

(12) Section 15201, paragraph 2.5.2: Add “or APCO/Willamette” after the words “Henry Pratt”

DRAWINGS:

(13) Plate 18, Detail ”MOTOR OPERATED 4-WAY VALVE MOUNTED ON WALL OR COLUMN DETAIL – DEMOLITION”: Delete Note 1.

(14) Plate 18, Detail ”MOTOR OPERATED 4-WAY VALVE MOUNTED ON WALL OR COLUMN ISOMETRIC”: Delete Note 1.

(15) Plate 8, Notes: Immediately below Note #6 add the following new note #7:

“7. The Contractor shall modify the existing piping and coupling to accommodate the laying length of the new cone or rotary valves. The condition of the existing coupling and pipe cannot be guaranteed at this time. Therefore, if a new dresser coupling is required, the Contractor shall provide one at no additional cost to the WA.”

(16) Plate 9, Notes: Immediately below Note #6 add the following new note #7:

“7. The Contractor shall modify the existing piping and coupling to accommodate the laying length of the new cone or rotary valves. The condition of the existing coupling and pipe cannot be guaranteed at this

time. Therefore, if a new dresser coupling is required, the Contractor shall provide one at no additional cost to the WA."

(17) Plate 23: Delete this plate, as originally issued, and substitute therefor the attached revised like-numbered plate with revision # 1, dated 12/16/2003.

ATTACHMENTS:

Revised Plate 23, dated 12/16/2003.